

What is claimed is:

1. A method for engineering cartilage tissue by three-dimensionally culturing bone marrow cells in a simulated microgravity environment.
2. The method according to claim 1, wherein the simulated microgravity environment provides gravity that is 1/10 to 1/100 of the ground gravity to an object on a time-average basis.
3. The method according to claim 1 or 2, wherein the simulated microgravity environment is attained with the use of a bioreactor that realizes a simulated microgravity environment on the earth by compensating the ground gravity by the stress resulting from rotation.
4. The method according to claim 3, wherein the bioreactor that realizes a simulated microgravity environment on the ground is a uniaxial rotary bioreactor.
5. The method according to claim 4, wherein the bioreactor that realizes a simulated microgravity environment on the ground is a Rotating Wall Vessel (RWV) bioreactor.
6. The method according to claim 5, wherein culture is conducted by seeding bone marrow cells at a density of  $10^6$  to  $10^7$  cells/cm<sup>3</sup> at a rotation speed of 8.5 to 25 rpm when a 5-cm RWV vessel is used.
7. The method according to any one of claims 1 to 6, wherein culture is conducted by adding TGF- $\beta$  and/or dexamethasone to a culture medium.
8. The method according to any one of claims 1 to 7, wherein bone marrow cells are two-dimensionally cultured to confluence, subcultured, and then cultured in a simulated microgravity environment.
9. The method according to any one of claims 1 to 8, wherein the bone marrow cells are isolated from a patient.